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C py f r the Elected Offic (EO/US) ATENT COOPERATION TRL. Y

	From the INTERNATIONAL BUREAU
PCT	То:
NOTIFICATION OF THE RECORDING OF A CHANGE (PCT Rule 92bis.1 and Administrative Instructions, Section 422) Date of mailing (day/month/year) 08 October 2001 (08.10.01)	BECKER, Konrad Novartis AG Corporate Intellectual Property Patent & Trademark Dept. CH-4002 Basel SUISSE
Applicant's or agent's file reference	
CL/V-31010A/	IMPORTANT NOTIFICATION
International application No. PCT/EP00/05835	International filing date (day/month/year) 23 June 2000 (23.06.00)
The following indications appeared on record concerning: The following indications appeared on record concerning: the applicant the inventor	the agent the common representative
Name and Address	State of Nationality State of Residence CH CH
NOVARTIS AG Schwarzwaldallee 215 D-4058 Basel	Telephone No.
Switzerland	Facsimile No.
·	Teleprinter No.
The International Bureau hereby notifies the applicant that the the person	
Name and Address NOVARTIS AG	State of Nationality State of Residence CH CH
Lichtstrasse 35 D-4056 Basel Switzerland	Telephone No.
Switzeriand	Facsimile No.
	Teleprinter No.
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
X the receiving Office	the designated Offices concerned
the International Searching Authority The International Preliminary Examining Authority	X the elected Offices concerned other:
	Authorized officer
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	François BAECHLER
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION - SATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room

in its capacity as elected Office

CP2/5C24 Arlington, VA 22202

Arlington, VA 22202 ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year)
07 February 2001 (07.02.01)
International application No.

Applicant's or agent's file reference CL/V-31010A/

International filing date (day/month/year) 23 June 2000 (23.06.00)

Priority date (day/month/year)
25 June 1999 (25.06.99)

Applicant

HEINRICH, Axel et al

PCT/EP00/05835

X in the demand filed with the International Preliminary Examining Authority on: 21 December 2000 (21.12.00)
in a notice effecting later election filed with the International Bureau on:
The election X was
was not
made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Authorized officer

R. E. Stoffel

Telephone No.: (41-22) 338.83.38

Facsimile No.: (41-22) 740.14.35

Copy for the Elected Office (EO/US)

ATENT COOPERATION TR. TY

	From the INTERNATIONAL BUREAU
PCT	То:
NOTIFICATION OF THE RECORDING OF A CHANGE (PCT Rule 92bis.1 and Administrative Instructions, Section 422) Date of mailing (day/month/year)	BECKER, Konrad Novartis AG Corporate Intellectual Property Patent & Trademark Dept. CH-4002 Basel SUISSE
18 December 2001 (18.12.01)	
Applicant's or agent's file reference CL/V-31010A/	IMPORTANT NOTIFICATION
International application No. PCT/EP00/05835	International filing date (day/month/year) 23 June 2000 (23.06.00)
The following indications appeared on record concerning: X the applicant X the inventor	the agent the common representative
Name and Address MÜLLER, Achim	State of Nationality State of Residence DE DE
Kolpingstrasse 44A D-63762 Grossostheim Germany	Telephone No.
	Facsimile No.
	Teleprinter No.
2. The International Bureau hereby notifies the applicant that the the person the name X the add	
Name and Address MÜLLER, Achim	State of Nationality State of Residence DE DE
Auf der Stichel 10A 63762 Grossostheim Germany	Telephone No.
	Facsimile No.
	Teleprinter No.
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
X the receiving Office	the designated Offices concerned
X the International Searching Authority	X the elected Offices concerned
the International Preliminary Examining Authority	other:
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Catherine MASSETTI
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

C py for the Elected Office (EO/US) ATENT COOPERATION TRL TY

	From the INTERNATIONAL BUREAU
PCT	То:
NOTIFICATION OF THE RECORDING OF A CHANGE (PCT Rule 92bis.1 and Administrative Instructions, Section 422) Date of mailing (day/month/year) 18 December 2001 (18.12.01)	BECKER, Konrad Novartis AG Corporate Intellectual Property Patent & Trademark Dept. CH-4002 Basel SUISSE
Applicant's or agent's file reference	
CL/V-31010A/	IMPORTANT NOTIFICATION
International application No. PCT/EP00/05835	International filing date (day/month/year) 23 June 2000 (23.06.00)
The following indications appeared on record concerning: X the applicant X the inventor	the agent the common representative
Name and Address	State of Nationality State of Residence DE DE
MÜLLER, Achim Kolpingstrasse 44A D-63762 Grossostheim Germany	Telephone No.
	Facsimile No.
	Teleprinter No.
2. The International Bureau hereby notifies the applicant that the the person the name X the add	
Name and Address	State of Nationality State of Residence DE DE
MÜLLER, Achim Auf der Stichel 10A 63762 Grossostheim	Telephone No.
Germany	Facsimile No.
	Teleprinter No.
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
X the receiving Office	the designated Offices concerned
X the International Searching Authority	X the elected Offices concerned
the International Preliminary Examining Authority	other:
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Catherine MASSETTI
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

WO 01/00393 PCT/EP00/05835

Hassenbül B. Liphardt.. R. Naef G. von Sprecher ...

NOTICE INFORMING THE APPLICANT OF THE **COMMUNICATION OF THE INTERNATIONAL**

(PCT Rule 47.1(c), first sentence)

APPLICATION TO THE DESIGNATED OFFICES

BECKER, Konrad **Novartis AG**

Corporate Intellectual Property

From the INTERNATIONAL BUREAU

Patent & Trademark Pept, TM Dept.

CH-4002 Basel SUISSE

PS/TS

APPL Kopien:

Applicant's or agent's file reference

04 January 2001 (04.01.01)

Date of mailing (day/month/year)

CL/V-31010A/

IMPORTANT NOTICE

International application No. PCT/EP00/05835

International filing date (day/month/year) 23 June 2000 (23.06.00)

Priority date (day/month/year)

25 June 1999 (25.06.99) 🖟

Applicant

NOVARTIS AG et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AG,AU,BZ,DZ,KP,KR,MZ,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD, GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX, NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the

applicant to furnish a copy of the international application (Rule 49.1 (a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 04 January 2001 (04.01.01) under No. WO 01/00393

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

Th Internati nal:Bureaù of WIPO . 334; ch min.des.C I mbettes 1211 Geneva 20, Switzerland

Authorized officer.

SHORTER OF WARREN - The recorded of Cold

ecsimile, No. (41-22), 740.14.35

Telephone No:

Visum

FASS

VT PCT EP00/05835



PITAL

From the:

INTERNATIONAL	PRELIMINARY	EXAMINING	AUTHORITY

To:	CKER	Koi	orad			PCT
NC	VART	IS A			,	
Pat	tent &	Trad	lemark Department			WRITTEN OPINION
ı	1-4002 IISSE	Bas	el		ije destali	(PCT Rule 66)
					Date of mailing	
					(day/month/year)	03.04.2001
		_	ent's file reference	3000	REPLY DUE	within 3 month(s) from the above date of mailing
CL	N -310)10A	VCVE 64			mont the above date of maining
			ication No.	International filing date (c	lay/month/year)	Priority date (day/month/year)
PC	T/EPO	0/05	835	23/06/2000		25/06/1999
Inte	mational	l Pate	int Classification (IPC) or bot	h national classification and	d IPC	
B29	9D11/0	00 .				· · · · · · · · · · · · · · · · · · ·
Арр	licant					
NO	VART	IS A	G et al.			
1.	This w	ritter	opinion is the first draw	n up by this Internation	al Preliminary Exami	ning Authority.
2.	This o	pinio	n contains indications rel	ating to the following ite	ms:	
	ı	×	Basis of the opinion		•	
	H		Priority			
	III		Non-establishment of or	oinion with regard to no	velty, inventive step a	and industrial applicability
	IV		Lack of unity of inventio	n		
	٧	☒	Reasoned statement un citations and explanatio			ventive step or industrial applicability;
	VI		Certain document cited			
	VII	Ø	Certain defects in the in		•	
	VIII	×	Certain observations on	the international applic	ation	
3.	The ap	plica	ant is hereby invited to re	eply to this opinion.		•
	When?		See the time limit indicated request this Authority to gra			that time limit,
5. F ¹¹⁷¹	"How?,	Çenge ≅en	By submitting a written replied For the form and the langua			nts, according to Rule 66.3: 444 7 7 7 9 9 9 9 9 9
	Also:	-	For an additional opportunit For the examiner's obligation For an informal communica	n to consider amendments	and/or arguments, see	Rule 66.4 bls.
	If no r	ply is	s filed, the international prelim	minary examination report	will be established on th	e basis of this opinion.
4.			e by which the international p			
	examin	ation	report must be established a	ccording to Rule 69.2 is: 2	5/10/2001:	The William Box of a material

Name and mailing address f the international preliminary examining authority:

roquie, h

European Patent Office D-80298 Münich Voutsadopoulos, I

Authorized officer / Examiner

Formalities officer (Incl. extension) frtime limits)



4. The amendments have resulted in the cancellation of:

pages:

Nos.:

☐ the description,

☐ the claims,

ı.	Ва	sis of the opinion	
1.			drawn on the basis of (substitute sheets which have been furnished to the receiving Office lation under Article 14 are referred to in this opinion as "originally filed".):
	De	scription, pages:	
	1-6		as originally filed
	Cla	aims, No.:	
	1-1	6	as originally filed
	Dra	awings, sheets:	e degree de la company de degree de la company de degree de de la company de la company de de de de de de de d La company de degree de degree de degree de degree de degree de de degree de d
	1/3	-3/3	as originally filed
			و المناف
2.	Wit lan	h regard to the lang guage in which the	guage, all the elements marked above were available or furnished to this Authority in the international application was filed, unless otherwise indicated under this item.
	The	ese elements were	available or furnished to this Authority in the following language: , which is:
		the language of a	translation furnished for the purposes of the international search (under Rule 23.1(b)).
		the language of po	ublication of the international application (under Rule 48.3(b)).
		the language of a 55.2 and/or 55.3).	translation furnished for the purposes of international preliminary examination (under Rule
3.	Wit	h regard to any nuc rnational prelimina	cleotide and/or amino acid sequence disclosed in the international application, the ry examination was carried out on the basis of the sequence listing:
		contained in the in	iternational application in written form.
١		filed together with	the international application in computer readable form.
•		furnished subsequ	uently to this Authority in written form.
			ently to this Authority in computer readable form.
		The statement tha	at the subsequently furnished written sequence listing does not go beyond the disclosure in pplication as filed has been furnished.
		The statement tha listing has been fu	t the information recorded in computer readable form is identical to the written sequence mished.

		the drawings,	sheets:	
5.		·		as if (some of) the amendments had not been made, since they have been osure as filed (Rule 70.2(c)):
		(Any replacement sh report.)	eet containing	g such amendments must be referred to under item 1 and annexed to this
6.	Add	itional observations, i	f necessary:	
V <u>.</u>		soned statement un tions and explanatio		2(a)(ii) with regard to novelty, inventive step or industrialapplicability;
1.		ement elty (N)	Claims	NO: 1
	Inve	entive step (IS)	Claims	NO: 2-8,15,16

2. Citations and explanations see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted: see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made: see separate sheet

Reference is made to the following document:

D1: PATENT ABSTRACTS OF JAPAN vol. 009, no. 087 (M-372), 17 April 1985 (1985-04-17) & JP 59 215838 A (MITSUBISHI DENKI KK), 5 December 1984 (1984-12-05)

V. Reasoned statement under Rule 66.2(a)(ii).

- In so far as claim 1 is directed to a UV illumination device as such, i.e. the
 casting mould, the object to be made and the material to be used do not
 constitute essential features of the claimed subject-matter, the disclosure of
 document D1 is detrimental to its novelty (Art. 33(2) PCT).
 The device known from D1 is clearly suitable for use with the same type of
 material, for making the same kind of products and furthermore in
 connection with casting moulds, all in accordance with the intended purpose
 of the apparatus of claim 1.
- 2. The dependent claims 2-8, 15 and 16 define constructional additions or alternatives to the device of claim 1, which come within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of these claims lacks an inventive step (Art 33(3) PCT).
- Claim 1 amended to refer to a two-part casting mould for an ophthalmic moulding made from a UV crosslinkable polymerisable material, comprising the UV illuminating device as presently defined, would meet the requirements of Art. 33(2) and 33(3) PCT.

VII. Certain defects in the international application.

- 1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
- 2. The features of the claims are not provided with reference signs placed in

parentheses (Rule 6.2(b) PCT).

VIII. Certain observations on the international application.

- Claim 11 makes reference to a trade name or designation, which appears
 moreover not to be precisely identified. Therefore claim 11 does not comply
 with the requirement of Art. 6 PCT for clarity (see the PCT Preliminary
 Examination Guidelines III-4.5b).
- 2. Claim 14 cannot be dependent on any of the claims 8-11 on its own, because the feature of a diaphragm is defined for the first time in claim 12 (Art. 6 PCT)

In the event of amendments and in order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify the amendments carried out, no matter whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based. Amendments should be filed by way of replacement pages in the manner stipulated by Rule 66.8(a) PCT. If the applicant regards it as appropriate these indications could be submitted in handwritten form on an extra copy of the relevant parts of the application as filed. However, the formal copies with the amendments should be in typewritten form (Rule 11.14), preferably in triplicate.

Moreover, the applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.

From the INTERNATIONAL SEARCHING AUTHOR	ITY		PCT
То:			
NOVARTIS AG			CATION OF TRANSMITTAL OF INNATIONAL SEARCH REPORT
Corporate Intellectual Property	' + T	Dept.	OR THE DECLARATION
Attn. BECKER, Konrad Patent & Trademark Department			
CH-4002 Basel	1	-Ckt. 2000//	(PCT Rule 44.1)
SWITZERLAND			
API	PL. M/D	F/L PS/TS	
Кор	olen:	Date or mailing	
		(day/month/year)	12/10/2000
Applicant's or agent's file reference			12,10,2000
CL/V -31010A/		FOR FURTHER ACT	FION See paragraphs 1 and 4 below
International application No.		International filing date	
PCT/EP 00/05835	₩.	(day/month/year)	23/06/2000
Applicant			
NOVARTIS AG			
MOVINITO AU	·····		
1. X The applicant is hereby notified that the Internation	aal Caarah	Donat has been saled!	
Filing of amendments and statement under Art	icle 19:		
The applicant is entitled, if he so wishes, to amend	the claim	s of the International App	lication (see Rule 46):
When? The time limit for filing such amendments	s is norma	lly 2 months from the date	e of transmittal of the
International Search Report; however, for	r more del	tails, see the notes on the	accompanying sheet.
Where? Directly to the International Bureau of	WIPO		·
34, chemin des Colombi 1211 Geneva 20, Switze	erland		
Fascimile No.: (41–22) 7	_		
For more detailed instructions, see the notes on	the accor	mpanying sheet.	·
2. The applicant is hereby notified that no Internation	 al Search	Report will be establishe	d and that the declaration under
Article 17(2)(a) to that effect is transmitted herewit	m.	•	
		Mr. 3	•
3. With regard to the protest against payment of (a	n) addition	nal fee(s) under Rule 40.2	t, the applicant is notified that:
the protest together with the decision thereon applicant's request to forward the texts of both	has been	transmitted to the International the desiries the	ational Bureau together with the
approxime request to formate the texts of both	n die prote	estand the decision there	on to the designated Offices.
no decision has been made yet on the protest	t; the appl	icant will be notified as so	oon as a decision is made.
4. Further action(s): The applicant is reminded of the fo	•		المهاد المعاد
Shortly after 18 months from the priority date, the internal if the applicant wishes to avoid or postpone publication	ational app	olication will be published	by the International Bureau.
priority claim, must reach the International Bureau as a completion of the technical preparations for international	orovided ir	Rules 90 <i>bis</i> 1 and 90 <i>bis</i>	2.3, respectively, before the
	•		The state of the s
Within 19 months from the priority date, a demand for int wishes to postpone the entry into the national phase un	itil 30 mon	iths from the priority date	(in some Offices even later).
Within 20 months from the priority date, the applicant mubefore all designated Offices which have not been elected.	ust performated in the	n the prescribed acts for demand or in a later store	entry into the national phase
priority date or could not be elected because the years in	ot bound i	by Chapter II.	Provident 13 Hours not me
to the transfer and the training of the court of the cour			4 PM PAGE 1

E ALL

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions; Section 205(b))

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a 1 tter.

The letter will not be published with the international application and the amended daims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is French, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

- [Where originally there were 48 claims and after amendment of some claims there are 51]:
 "Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
- [Where originally there were 15 claims and after amendment of all claims there are 11]: "Claims 1 to 15 replaced by amended claims 1 to 11."
- [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
 "Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or "Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
- 4. [Where various kinds of amendments are made]: "Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

it must be in the language in which the international appplication is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

o fragging

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau; also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62:2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office; see Volume II of the PCT-Applicant's Guide.

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PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CL/V -31010A/	FOR FURTHER See Notif	fication of Transmittal of International Search Report CT/ISA/220) as well as, where applicable, item 5 below.
International application No.	International filing date (day/month/y	year) (Earliest) Priority Date (day/month/year)
PCT/EP 00/05835	23/06/2000	25/06/1999
Applicant NOVARTIS AG		
This International Search Report has been according to Article 18. A copy is being tra	n prepared by this International Search Insmitted to the International Bureau.	ning Authority and is transmitted to the applicant
This International Search Report consists It is also accompanied by	of a total of sheet a copy of each prior art document cited	
Basis of the report		
With regard to the language, the insurance in which it was filed, unless that the language in which it was filed, unless that the language is a second to the language.	nternational search was carried out on ess otherwise indicated under this item	n the basis of the international application in th
the international search was Authority (Rule 23.1(b)).	as carried out on the basis of a translat	tion of the international application furnished to this
contained in the Internation	I/or amino acid sequence disclosed i sequence listing: nal application in written form. national application in computer reada	in the international application, the international search
	this Authority in written form.	
furnished subsequently to	this Authority in computer readble form	n.
the statement that the subsinternational application as	sequently furnished written sequence li filed has been furnished.	listing does not go beyond the disclosure in the
the statement that the infor furnished	mation recorded in computer readable	e form is identical to the written sequence listing has been
2. Certain claims were foun	d unsearchable (See Box I).	_
3. Unity of invention is lack		-
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4. With regard to the title,	. <i></i>	
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the text has been establish	ed by this Authority to read as follows:	
5. With regard to the abstract,		
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6. The figure of the drawings to be publis		1
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International application No.

INTERNATIONAL SEARCH REPORT

PCT/EP 00/05835

Box III TEXT OF THE ABSTRACT (Continuation of it m 5 of th first sheet)

Line 7: after "fibres" insert " (3) "
Line 8: delete from "fibres" until "can"
Line 8: after "optical"insert "fibres (3), to an ultraviolet lamp (2), an ultraviolet lamp (2) can "



International Application No PCT/FP 00/05835

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A. CLAS IPC 7	SSIFICATION OF SUBJECT MATTER B29011/00			
 According	g to International Patent Classification (IPC) or to both national d	assification and IPC		•
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Minimum IPC 7	documentation searched (classification system followed by clas B290	sification symbols)		,
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Electronic	c data base consulted during the international search (name of d	ata base and, where practica	l, search terms used)	
PAJ,	WPI Data			·
C. DOCU	MENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document, with indication, where appropriate, of the common	the relevant passages		Relevant to claim No.
Α .	WO 87 04390 A (COOPERVISION OF LIMITED) 30 July 1987 (1987-07 cited in the application claim 1	PTICS 7-30)		1
Ą .	EP 0 367 513 A (NATIONAL RESEAR DEVELOPMENT CORPORATION) 9 May 1990 (1990-05-09) cited in the application column 9, line 33 - line 36; c		🕠	ger 1 erenen ko mzet kornek e
A	US 5 508 317 A (B. MÜLLER) 16 April 1996 (1996-04-16) cited in the application claim 1		, ,	i
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χ Fur	ther documents are listed in the continuation of box C.	X Patent family r	members are listed in	annex.
Special c	ategories of cited documents:	7		
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International Application No PCT/EP 00/05835

·	ation) DOCUMENTS CONSIDERED TO BE RELEVANT			
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A	EP 0 637 490 A (CIBA-GEIGY AG) 8 February 1995 (1995-02-08) cited in the application claims 1,3		1	
X	PATENT ABSTRACTS OF JAPAN vol. 009, no. 087 (M-372), 17 April 1985 (1985-04-17) & JP 59 215838 A (MITSUBISHI DENKI KK), 5 December 1984 (1984-12-05) abstract		1	
A 22.	PATENT ABSTRACTS OF JAPAN vol. 011, no. 120 (M-580), 15 April 1987 (1987-04-15) & JP 61 261009 A (KAWASUMI LAB INC), 19 November 1986 (1986-11-19) abstract			*25. 4
A	PATENT ABSTRACTS OF JAPAN vol. 014, no. 468 (P-1115), 12 October 1990 (1990-10-12) & JP 02 187707 A (SUMITOMO ELECTRIC IND LTD), 23 July 1990 (1990-07-23) abstract		1	. n.
A	DE 40 14 363 A (GÜNTHER NATH) 7 November 1991 (1991-11-07) column 1 -column 2; claim 1; figure		1	
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INTERNATIONAL SEARCH REPORT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No PCT/EP 00/05835

Patent document cited in search report		Publication date	Patent family member(s)	Publication dat
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PATENT COOPERATION TREATY

From the INTERNATIONAL PRELIMINARY EXAMIN	ING AUTHORITM	Dept.	
To: BECKER, Konrad NOVARTIS AG Corporate Intellectual Property Patent & Trademark Department CH-4002 Basel SUISSE	- 8. APPL M/D Kopien:	THEINIH	PCT TION OF TRANSMITTAL OF RNATIONAL PRELIMINARY AMINATION REPORT (PCT Rule 71.1)
		(day/month/year)	06.08.2001
Applicant's or agent's file reference CL/V -31010A/CVE 64		IM	PORTANT NOTIFICATION
	mational filing date (d 06/2000	ay/month/year)	Priority date (day/month/year) 25/06/1999
Applicant NOVARTIS AG et al.			. C. W gr. C

- 1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
- 2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
- 3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA

Authorized officer

Langhoff, M



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

International application No. PCT/EP00/05835 23/06/2000 International filing date (day/month/year) 25/06/1999 International Patent Classification (IPC) or national classification and IPC B29D11/00 Applicant NOVARTIS AG et al. 1. This international preliminary examination report has been prepared by this International Preliminary Examining Aut and is transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 5 sheets, including this cover sheet. □ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have	·					
CLV -31010A/CVE 64 FOR FURTHER ACTION Preliminary Examination Report (Form PCT/IPEA/41 International application No. International filling date (day/month/year) Priority date (day/month/year) 23/06/2000 25/06/1999 International Patent Classification (IPC) or national classification and IPC B29D11/00 Applicant NOVARTIS AG et al. 1. This international preliminary examination report has been prepared by this International Preliminary Examining Aut and is transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 5 sheets, including this cover sheet. □ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authorit (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of sheets. 3. This report contains indications relating to the following items:	Λ/ -31010Δ/CVF 64		See Notification of Transmittal of International			
PCT/EP00/05835 23/06/2000 25/06/1999		FOR FURTHER ACTION	Preliminary Examination Report (Form PCT/IPEA/416)	!		
International Patent Classification (IPC) or national classification and IPC B29D11/00 Applicant NOVARTIS AG et al. 1. This international preliminary examination report has been prepared by this International Preliminary Examining Aut and Is transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 5 sheets, including this cover sheet. □ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authorit (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of sheets. 3. This report contains indications relating to the following items:	emational application No.	International filing date (day/mont)	nth/year) Priority date (day/month/year)			
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VI Certain documents cited			and the same and the same and the same of	***		
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/05835

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		the language of a	translation furn	ished for t	the purpose	s of the inter	national sea	rch (under	Rule 23.1	(b)).
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3.	Witl inte	n regard to any nu rnational prelimina	cleotide and/or ry examination v	amino a was carrie	cid sequen ed out on the	ce disclosed basis of the	in the interr	ational app listing:	olication, th	ie
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4. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/05835

		the drawings,	sheets:		-
5.	This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):				
		(Any replacement she report.)	eet conta	ining such	h amendments must be referred to under item 1 and annexed to this
6.	Add	litional observations, if	necessa	ry:	
٧.		soned statement und tions and explanatio			vith regard to novelty, inventive step or industrial applicability; ch statement
1.	Stat	ement			
	Nov	elty (N)	Yes: No:	Claims Claims	7 7 7
	Inve	entive step (IS)	Yes: No:	Claims -Claims	9-11 2-8,12-16
	Indu	strial applicability (IA)	Yes:	Claims	1-16

2. Citations and explanations see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted: see separate sheet

Claims

No:

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question wheth r the claims are fully supported by the description, are made:

EXAMINATION REPORT - SEPARATE SHEET

Reference is made to the following document:

D1: PATENT ABSTRACTS OF JAPAN vol. 009, no. 087 (M-372), 17 April 1985 (1985-04-17) & JP 59 215838 A (MITSUBISHI DENKI KK), 5 December 1984 (1984-12-05)

Reasoned statement under Article 35(2).

- 1. In so far as claim 1 is directed to a UV illumination device as such, i.e. the casting mould, the object to be made and the material to be used do not constitute essential features of the claimed subject-matter, the disclosure of document D1 is detrimental to its novelty (Art. 33(2) PCT). The device known from D1 is clearly suitable for use with the same type of material, for making the same kind of products and furthermore in connection with casting moulds, all in accordance with the intended purpose of the apparatus of claim 1.
- 2. The dependent claims 2-8, 12-15 and 16 define constructional additions or alternatives to the device of claim 1, which come within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of these claims lacks an inventive step (Art 33(3) PCT).
- 3. The use of a quartz rod for optical coupling of the UV lamp with the optical fibre, according to claim 9, serves the purpose of allowing high intensity radiation to be transmitted without risk of damaging the optical fibre. This solution to the problem of increasing the efficiency of the device is not known or made obvious by the available prior art. Thus, claim 9 meets the requirements of Art. 33(2) and 33(3) PCT.
- 4. Claims 10 and 11 are dependent on claim 9 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

EXAMINATION REPORT - SEPARATE SHEET

VII. Certain defects in the international application.

- 1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
- 2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

VIII. Certain observations on the international application.

- 1. Claim 11 makes reference to a trade name or designation, which appears moreover not to be precisely identified. Therefore claim 11 does not comply with the requirement of Art. 6 PCT for clarity (see the PCT Preliminary Examination Guidelines III-4.5b).
- Claim 14 cannot be dependent on any of the claims 8-11 on its own, 2. because the feature of a diaphragm is defined for the first time in claim 12 (Art. 6 PCT)

PCT

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

From the INTERNATIONAL BUREAU

To

BECKER, Konrad Novartis AG Corporate Intellectual Property Patent & Trademark Dept. CH-4002 Basel SUISSE

Date of mailing (day/month/year) 16 August 2000 (16.08.00)	
Applicant's or agent's file reference CL/V-31010A/	IMPORTANT NOTIFICATION
International application No. PCT/EP00/05835	International filing date (day/month/year) 23 June 2000 (23.06.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 25 June 1999 (25.06.99)

присанс

NOVARTIS AG et al

- The applicant is hereby notified of the date of receipt (except where the letters."NR" appear in the right-hand column) by the
 International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwis
 indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority
 document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- 2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
- 3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- 4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date Priority application No. Country or regional Office or PCT receiving Office of priority document

25 June 1999 (25:06.99) 99112256:5 EP 01 Augu 2000 (01.08.00)

The International Bureau of WIPO 34, chemin des Colembettes 21211 Geneva, 20, Switz rland

Authorized öfficer

R. Rais

Telephone No. (41-22) 338-83-3

PATENT COOPERATION REATY

PCT

REC'D 0 8 AUG 2001
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Annlings	0.05.00	antia file refere			t	
		ent's file reference	FOR FURTHER ACTIO		cation of Transmittal of Inter	
		VCVE 64			Examination Report (Form	n PC1/IPEA/416)
		lication No.	International filing date (day/mo	onth/year)	Priority date (day/month)	(year)
PCT/EP			23/06/2000		25/06/1999	
Internation B29D11		ent Classification (IPC) or na	tional classification and IPC			
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		·				
Applicant						
NOVAR	TIS A	G et al.				
1. This	intern	ational preliminary exami	nation report has been prepa	red by this Inte	rnational Proliminant Ex	vamining Authority
and i	s tran	smitted to the applicant a	according to Article 36.	red by this frite	mational Freimmary Ex	kaniining Authority
2. This	REPO	ORT consists of a total of	5 sheets, including this cove	sheet.		
	This re	eport is also accompanied	d by ANNEXES, i.e. sheets of is for this report and/or sheet	the description	n, claims and/or drawing	gs which have
(see R	ule 70.16 and Section 60	of the Administrative Instru	s containing re ctions under th	ctifications made before le PCT).	this Authority
iries	e ann	exes consist of a total of	sneets.			
<u>.</u>						
3. This	report	contains indications relat	ting to the following items:			
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		Basis of the report Priority				
111			pinion with regard to novelty,	nyantiya atan	and industrial applicability	· .
IV		Lack of unity of invention		iiveillive step a	and industrial applicabili	ity
V	\boxtimes	Reasoned statement un	der Article 35(2) with regard the suporting such statement	o novelty, inve	ntive step or industrial a	applicability;
, VI		Certain documents cite				
VII	_	Certain defects in the in				
VIII	\boxtimes		the international application			
Date of sub	missio	n of the demand	Date	of completion of t	his report	
				p.o	ino report	
21/12/20	00		06.08	2001		
A1						
Name and in preliminary	mailing exami	address of the international ning authority:	Autho	rized officer		SONES MICHE
- 31	Euro	pean Patent Office				(Se
<i>9</i>))		298 Munich +49 89 2399 - 0 Tx: 523656	epmu d Vout	sadopoulos, l	<	
		+49 89 2399 - 4465				Sed is the state land

Telephone No. +49 89 2399 2922

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/05835

1.	. With regard to the elements of the international application (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)): Description, pages:							
	1-6	6	as originally filed					
	Cla	aims, No.:						
	1-1	6	as originally filed					
	Dra	awings, sheets:						
	1/3	-3/3	as originally filed					
2.	Wit lang	h regard to the lang guage in which the i	uage, all the elements marked above were available or furnished to this Authority in the nternational application was filed, unless otherwise indicated under this item.					
	The	ese elements were a	vailable or furnished to this Authority in the following language: , which is:					
		the language of a t	ranslation furnished for the purposes of the international search (under Rule 23.1(b)).					
			blication of the international application (under Rule 48.3(b)).					
		the language of a t 55.2 and/or 55.3).	ranslation furnished for the purposes of international preliminary examination (under Rule					
3.	 With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing: 							
		contained in the int	ernational application in written form.					
		filed together with t	he international application in computer readable form.					
		furnished subseque	ently to this Authority in written form.					
		furnished subsequently to this Authority in computer readable form.						
		The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.						
		The statement that listing has been fur	the information recorded in computer readable form is identical to the written sequence nished.					
4.	The	amendments have	resulted in the cancellation of:					
		the description,	pages:					
		the claims,	Nos.:					

INTERNATIONAL PRELIMINARY **EXAMINATION REPORT**

International application No. PCT/EP00/05835

	the drawings,	sheets:	
5.	This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):		
	(Any replacement sh report.)	neet containing such amendments must be referred to under item 1 and annexed to this	

- 6. Additional observations, if necessary:
- V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- 1. Statement

Novelty (N)

Yes: Claims 9-11

No:

Claims 1

Inventive step (IS)

Yes:

Claims 9-11

No:

Claims 2-8,12-16

Industrial applicability (IA)

Yes:

Claims 1-16

Claims

No:

2. Citations and explanations see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted: see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made: see separate sheet

EXAMINATION REPORT - SEPARATE SHEET

Reference is made to the following document:

D1: PATENT ABSTRACTS OF JAPAN vol. 009, no. 087 (M-372), 17 April 1985 (1985-04-17) & JP 59 215838 A (MITSUBISHI DENKI KK), 5 December 1984 (1984-12-05)

V. Reasoned statement under Article 35(2).

- 1. In so far as claim 1 is directed to a UV illumination device as such, i.e. the casting mould, the object to be made and the material to be used do not constitute essential features of the claimed subject-matter, the disclosure of document D1 is detrimental to its novelty (Art. 33(2) PCT). The device known from D1 is clearly suitable for use with the same type of material, for making the same kind of products and furthermore in connection with casting moulds, all in accordance with the intended purpose of the apparatus of claim 1.
- 2. The dependent claims 2-8, 12-15 and 16 define constructional additions or alternatives to the device of claim 1, which come within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of these claims lacks an inventive step (Art 33(3) PCT).
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- Claims 10 and 11 are dependent on claim 9 and as such also meet the 4. requirements of the PCT with respect to novelty and inventive step.

VII. Certain def cts in the international application.

- Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background 1. art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
- The features of the claims are not provided with reference signs placed in 2. parentheses (Rule 6.2(b) PCT).

VIII. Certain observations on the international application.

- 1. Claim 11 makes reference to a trade name or designation, which appears moreover not to be precisely identified. Therefore claim 11 does not comply with the requirement of Art. 6 PCT for clarity (see the PCT Preliminary Examination Guidelines III-4.5b).
- 2. Claim 14 cannot be dependent on any of the claims 8-11 on its own, because the feature of a diaphragm is defined for the first time in claim 12 (Art. 6 PCT)

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

International application No.	Applicant's or agent's file reference CL/V -31010A/	FOR FURTHER see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.			
Applicant NOVARTIS AG This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau. This International Search Report consists of a total of	International application No.	International filing date (day/month/year)	(Earliest) Priority Date (day/month/year)		
This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau. This International Search Report consists of a total of	PCT/EP 00/05835	23/06/2000	25/06/1999		
This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau. This International Search Report consists of a total of	Applicant		<u></u>		
This International Search Report consists of a total of	NOVARTIS AG				
It is also accompanied by a copy of each prior art document cited in this report. 1. Basis of the report a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item. the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)). b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing: contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in computer readable form. the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished. Certain claims were found unsearchable (See Box I). Unity of invention is lacking (see Box II). With regard to the title, The text is approved as submitted by the applicant. the text has been established by this Authority to read as follows: 5. With regard to the abstract, the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority. 6. The figure of the drawings to be published with the abstract is Figure No. The figure of the drawings to be published with the abstract is Figure No. A suggested by the applicant. None of the figures.	This International Search Report has bee according to Article 18. A copy is being to	en prepared by this International Searching Autransmitted to the International Bureau.	hority and is transmitted to the applicant		
a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item. the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)). b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing: contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished 2. Certain claims were found unsearchable (See Box I). Unity of Invention is lacking (see Box II). 4. With regard to the title, The text is approved as submitted by the applicant. the text has been established by this Authority to read as follows: 5. With regard to the abstract, the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority. 6. The figure of the drawings to be published with the abstract is Figure No. as suggested by the applicant. None of the figures.			s report.		
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4. With regard to the title, X	2. Certain claims were for	ınd unsearchable (See Box I).			
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as suggested by the applicant. None of the figures.	the text has been established	shed, according to Rule 38.2(b), by this Authori	ity as it appears in Box III. The applicant may, port, submit comments to this Authority.		
because the applicant failed to suggest a figure.	6. The figure of the drawings to be pub	lished with the abstract is Figure No.	1		
	as suggested by the appl	icant.	None of the figures.		
because this figure better characterizes the invention.	X because the applicant fai	led to suggest a figure.			
	because this figure better	characterizes the invention.			

International application No.

INTERNATIONAL SEARCH REPORT

PCT/EP 00/05835

Box III	TEXT OF THE	ABSTRACT	(Continuation	of item 5	5 of the first sheet)	
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Line 7: after "fibres" insert " (3) "
Line 8: delete from "fibres" until "can"
Line 8: after "optical"insert "fibres (3), to an ultraviolet lamp (2), an ultraviolet lamp (2) can "

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B29011/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\begin{tabular}{ll} \begin{tabular}{ll} Minimum documentation searched (classification system followed by classification symbols) \\ IPC 7 B29D \\ \end{tabular}$

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, WPI Data

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Α	WO 87 04390 A (COOPERVISION OPTICS LIMITED) 30 July 1987 (1987-07-30) cited in the application claim 1	1
Α	EP 0 367 513 A (NATIONAL RESEARCH DEVELOPMENT CORPORATION) 9 May 1990 (1990-05-09) cited in the application column 9, line 33 - line 36; claim 1	1
Α	US 5 508 317 A (B. MÜLLER) 16 April 1996 (1996-04-16) cited in the application claim 1	1
	_/	

Further documents are listed in the continuation of box C.	Patent family members are listed in annex.
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report
6 October 2000	12/10/2000
Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Kesten, W

1

Category °	ation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
		neevan to daim No.
A	EP 0 637 490 A (CIBA-GEIGY AG) 8 February 1995 (1995-02-08) cited in the application claims 1,3	1
X	PATENT ABSTRACTS OF JAPAN vol. 009, no. 087 (M-372), 17 April 1985 (1985-04-17) & JP 59 215838 A (MITSUBISHI DENKI KK), 5 December 1984 (1984-12-05) abstract	1
A	PATENT ABSTRACTS OF JAPAN vol. 011, no. 120 (M-580), 15 April 1987 (1987-04-15) & JP 61 261009 A (KAWASUMI LAB INC), 19 November 1986 (1986-11-19) abstract	1
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(72) Inventors; and

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- (71) Applicant (for all designated States except AT, US): NO-VARTIS AG [CH/CH]; Schwarzwaldallee 215, D-4058 Basel (CH).
- (71) Applicant (for AT only): NOVARTIS-ERFINDUNGEN VERWALTUNGSGESELLSCHAFT M.B.H. [AT/AT]: Brunner Strasse 59 A-1230 Vienna (AT).

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(75) Inventors/Applicants (for US only): HEINRICH, Axel [DE/US]; Aylesbury Farms, 6115 Abbotts Bridge Road, Apartment #1409, Duluth, GA 30097 (US). MÜLLER, Achim [DE/DE]; Kolpingstrasse 44A, D-63762 Grossostheim (DE). SEIFERLING, Bernhard [DE/DE]; Dr. Wohlfahrt Strasse 6, D-63773 Goldbach (DE).

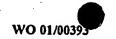
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(54) Title: UV-ILLUMINATION DEVICE

Line to the transfer of the tr (57) Abstract: The invention relates to a method and device for crosslinking a biocompatible, polymerisable material in order to produce an ophthalmic moulding, especially an ophthalmic lens, particularly a contact lens. The invention is concerned with the problem of further improving the crosslinking process for ophthalmic mouldings consisting of biocompatible polymerisable materials, especially for contact lenses, in order to ensure constant quality of the mouldings. This problem is solved by coupling the UV light into the mould cavity using optical fibres; thereby ensuring homogeneous illumination of the mould cavity. By attaching a number of optical fibres to an ultraviolet lamp, an ultraviolet lamp can be used to crosslink a number of casting moulds, whereupon > a very high intensity of illumination can be attained in an efficient manner, enabling rapid polymerisation of the filled moulding material to take place.



UV-illumination device

The invention relates to a method and device for crosslinking a biocompatible, polymerisable material in order to produce an ophthalmic moulding, especially an ophthalmic lens, particularly a contact lens.

Contact lenses, which are to be manufactured economically in large unit numbers, are preferably manufactured by the so-called mould or full-mould process. In these processes, the lenses are manufactured into their final shape between two mould halves, so that there is no need to subsequently finish the surfaces of the lenses, nor to finish the edges. Mould processes are described for example in PCT patent application no. WO/87/04390 or in EP-A 0 367.513.

The contact lenses produced in this manner are moulded parts having little mechanical stability and a water content of more than 60 % by weight. After manufacture, the lens is inspected, then packed and subjected to heat sterilisation at 121°C in an autoclave.

In these known mould processes, the geometry of the contact lenses to be manufactured is defined by the mould cavity. The edge of the contact lens is likewise formed by the mould which normally consists of two mould halves. The geometry of the edge is defined by the contour of the two mould halves in the area in which they make contact.

To manufacture a contact lens, first of all a certain amount of a flowable starting material is placed in the female mould half. Afterwards, the mould is closed by placing the male mould half thereon. Normally, a surplus of starting material is used, so that, when the mould is closed, the excess amount is expelled out into an overflow area adjacent to the mould cavity. The subsequent polymerisation or crosslinking of the starting material takes place by radiation with UV light, or by heat action, or by another non-thermal method.

In US-A-5,508,317, a new contact lens material is described, which represents an important improvement in the chemistry of polymerisable starting materials for the manufacture of contact I nses. The patent discloses a water-soluble composition of a prepolymer, which is filled into the mould cavity and then crosslinked photochemically. Since the prepolymer has

several crosslinkable groups, the crosslinking is of high quality, so that a finished lens of optical quality can be produced within a few seconds, without the necessity for subsequent extraction or finishing steps. Owing to the improved chemistry of the starting material as illustrated in the patent, contact lenses can be produced at considerably lower cost, so that in this way it is possible to produce disposable lenses that are used only once.

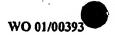
EP-A-0 637 490 describes a process by means of which a further improvement may be obtained in the preparation process of contact lenses with the prepolymer described in US-A-5,508,317. Here, the material is filled into a mould comprising two halves, whereby the two mould halves do not touch, but a thin circular gap is located between them. The gap is linked to the mould cavity, so that surplus lens material can flow away into the gap. Instead of the polypropylene moulds that may be used only once, reusable quartz/glass moulds may be used. Because of the water-soluble basic chemistry, after a lens has been produced, the uncrosslinked prepolymer and other residues can be removed from the moulds rapidly and effectively with water, and the moulds dried in the air. In this way, high-precision of the lens shaping may also be achieved. Crosslinking of the prepolymer takes place by radiation especially with UV light, whereby radiation is restricted to the mould cavity by a chromium screen. In this way, only the material in the mould cavity is crosslinked, so that there is high reproducibility of the edges of the lens without closing the two polypropylene mould halves. The uncrosslinked shaded-off prepolymer solution can be easily washed away from the shaped, crosslinked lens with water.

However, during radiation with conventional UV lamps, there are frequently problems concerning homogeneity of radiation, especially when using glass casting moulds. Owing to the uneven illumination of the mould cavity, the moulding may have a varying degree of crosslinking, which has a negative effect on the stability of the moulding. The edges in particular are frequently insufficiently polymerised, so that the borders of the moulding are not clearly defined.

The invention is concerned with the problem of further improving the crosslinking process for ophthalmic mouldings consisting of biocompatible polymerisable materials, especially for contact lenses, in order to ensure constant quality of the mouldings.

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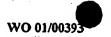
The invention solves this problem with the features indicated in claim 1. As far as further essential embodiments of the process according to the invention and of the device according to the invention are concerned, reference is made to the dependent claims.

By coupling the UV light into the mould cavity using optical fibres, homogeneous illumination is assured, together with high intensity of radiation of the mould cavity. By attaching a number of optical fibres to an ultraviolet lamp, an ultraviolet lamp can be used to crosslink a number of casting moulds, whereupon a very high intensity of illumination can be attained in an efficient manner, enabling rapid polymerisation of the filled moulding material to take place.

Further details and advantages of the invention may be seen from the description that follows and the drawing. In the drawing,

- Fig.1 shows a schematic illustration of an embodiment of a UV illuminating device according to the invention;
- Fig.2 shows a schematic illustration of a means of coupling the UV light into an optical fibre;
- Fig. 3 shows a schematic illustration of the exposure of a casting mould by an optical fibre.

The UV illuminating device 1 illustrated schematically in fig. 1 is preferably mounted in a housing 16 illustrated only schematically here, and consists of a UV lamp 2 and several, advantageously 5 to 50, preferably 10 to 30 optical fibres 3, which surround the UV lamp 2 and are each fixed by a holder 4. The UV lamp 2 in question is suitably a mercury lamp, especially a doped medium pressure mercury lamp, whereby a medium pressure lamp HPA 2020 from Philips or a comparable medium pressure lamp from the company Heraeus can be used for example. The optical fibres 3 conveniently have a length of 0.3 to 2 m and are advantageously formed as liquid optical fibres, since these are particularly well suited to the transmission of UV light. Liquid optical fibres are notable for their high UV transmission, their more homogeneous distribution of intensity of the emerging light rays compared with



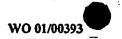
quartz fibre bundles, and their higher usable cross-sectional area given the same diameter. The UV lamp 2 can be suitably mounted on a quick-change cradle (not illustrated) to enable the lamp 2 to be exchanged easily. The emission spectrum of the UV lamp 2 advantageously has a high UV intensity in the wavelength range 280 - 360 nm, since in this range various types of photoinitiators that can be used in lens material can be activated, for example Irgacure 2050. Due in particular to the radial arrangement of the optical fibres 3 in relation to the longitudinal axis of the UV lamp 2, a high proportion of the radiation emitting from the UV lamp 2 can be coupled into the optical fibres 3 and thus used for crosslinking. The maximum number of optical fibres that can be used is dependent on the diameter of the UV lamp 2 and the distance to the UV lamp. In addition, there is advantageously a sensor 5, which measures the intensity of UV radiation. It is located near to the UV lamp 2. The measurement is passed on to a regulating unit 6 which compares the measured intensity of radiation with a theoretical value and regulates the current intensity I to keep it constant. In addition, a cool stream of air 7 is provided to cool the UV lamp 2. It is passed from the cold components over the hot components by means of an appropriate construction of the housing 16, or by a ventilator 22, respectively. The air stream is controlled by one or more temperature sensors 8 which measure the temperature inside the housing. The cool air stream ensures that the UV lamp 2 burns at an optimum temperatur and that the components in the housing of the lamp do not become overheated. In this way, constant operating conditions are assured, which also prolong the life of the UV lamp 2.

The coupling of UV light into the optical fibres 3 is illustrated in more detail in fig. 2. In order to couple a high intensity of radiation into the optical fibres, a minimum distance to the UV lamp is required, advantageously ca. 1 mm. Since the surface of the UV lamp reaches a temperature or more than 800°C, direct coupling to a liquid optical fibre is impossible owing to its temperature sensitivity. Therefore, the light emitting from the UV lamp is firstly coupled into a quartz rod 9, the diameter of which is co-ordinated with that of the optical fibre 3. The length of the quartz rod 9 depends on the effectiveness of cooling produced by the stream of air. In a first approximation, the length of the quartz rod 9 has no affect on the light intensity that can be coupled into the optical fibres 3. Depending on the design of the lamp, the length of the quartz rod 9 is advantageously between 50 and 120 mm. Between the end of the quartz rod 9 facing away from the UV lamp 2 and the admission area 30 to the optical fibres, there is advantageously a cut-on filter 10 which shades out the short-waved UV radiation < 280 nm, since this causes a more rapid ageing of the optical fibres 3. The cut-on

filter additionally prevents polymer degradation of the lens material. The cut-on filter 10 is suitably a WG 305 or 295 filter from the company Schott. Furthermore, a diaphragm 11 is provided between the cut-on filter 10 and the optical fibre admission area 30. By adjusting the aperture 12 of the diaphragm 11, the intensity of radiation entering the optical fibre 3 can be regulated. To regulate the coupled light intensity, the distance between the optical fibre admission area 30 and the quartz rod 9 can also be modified. If a high UV intensity is desired, the distance should be as short as possible. In particular, there may be provisions for the diaphragm aperture 12 to be controlled via a stepping motor unit 13 which is linked to the diaphragm 11 in particular by a flexible coupling 14, whereby adjustment of the diaphragm aperture 12 can be regulated by the measurement of light intensity using a suitable UV measuring unit 15 at the light exit. There should be provision in particular for the diaphragm 11 of each optical fibre 3 to be adjustable independently. As well as solving this by means of a stepping motor unit, the diaphragms 11 may also be controlled manually if desired. The optical fibres 3 emerge from the housing 16 and are respectively arranged over a casting mould 17.

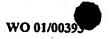
Fig. 3 depicts the exposure of a casting mould 17 consisting of a lower mould half 18 and an upper mould half 19. Arranged between the end of an optical fibre 3 and the upper mould half 19 is preferably a UV condenser 20, which consists of tempered quartz lenses. The condenser 20 serves to bundle the emitting ray of light. The optics thereof are coordinated with the geometry of the casting mould. In order to produce a contact lens which is polymerised throughout and has good quality of the edges, the distances between the end of the optical fibre 3 and the condenser 20 and between the condenser 20 and the upper mould half 19 are crucial. In addition, for an optimum path of rays, a diaphragm must be provided in the upper mould half 19. If the distance between the condenser 20 and the casting mould 17 is increased, the intensity of radiation is reduced. This leads to slower... polymerisation of the lens material. However, if there is constant exposure time and the intensity of radiation is too high, the contact lenses become brittle and the quality of the edges of the contact lenses deteriorates. When selecting the distance between the condenser 20 and the upper mould 19, an optimum setting must be found, which also depends on the geometry of the upper mould half. This distance is suitably between 30 and 5 mm.

In this way, by coupling the UV light into the mould cavity using optical fibres, the invention enables the mould cavity to be illuminated evenly. By coupling a number of optical fibres to a UV lamp, a very high and even intensity of illumination can be attained in an efficient manner, so that it is possible to polymerise the introduced moulding material very rapidly.



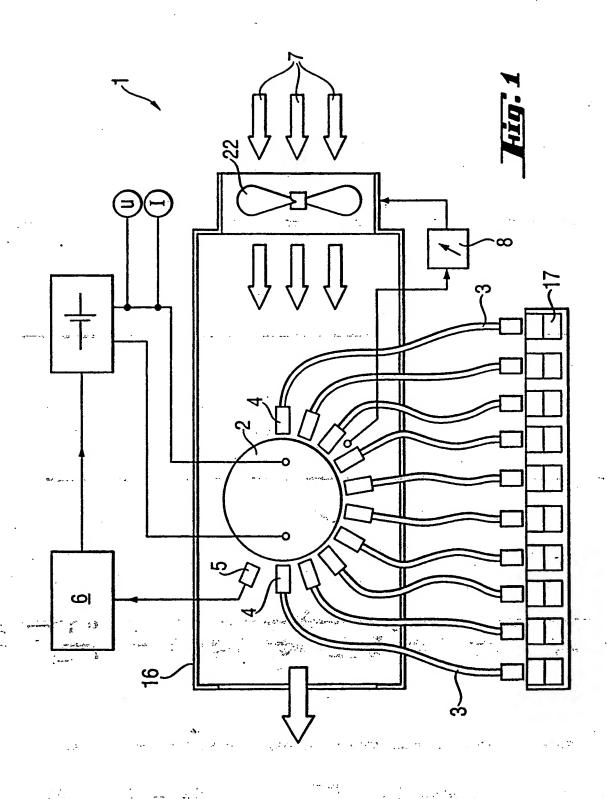
What we claim is

- 1. UV illuminating device for crosslinking biocompatible, polymerisable material in order to produce an ophthalmic moulding, especially an ophthalmic lens, in particular a contact lens, which is produced by crosslinking with UV light in a casting mould consisting of two mould halves, characterised by one or more UV lamps which are each surrounded by several optical fibres, whereby the optical fibres transmit the light emitting from the UV lamp to one or more casting moulds.
- 2. UV illuminating device according to claim 1, whereby an optical fibre is linked to a casting mould.
- 3. UV illuminating device according to claim 1 or claim 2, whereby the UV lamp in question is a mercury lamp.
- 4. UV illuminating device according to claim 3, whereby the UV lamp in question is a doped mercury lamp.
- 5. UV illuminating device according to one or more of claims 1 to 4, whereby the optical fibres in question are liquid optical fibres.
- 6. UV illuminating device according to one or more of claims 1 to 5, whereby the emission spectrum of the UV lamp has a high UV intensity at 280 360 nm.
- 7. UV illuminating device according to one or more of claims 1 to 6, whereby a sensor measuring the radiation intensity of the UV lamp is provided and connected to a regulating unit to regulate the UV radiation.
- 8. UV illuminating device according to one or more of claims 1 to 7, whereby a measuring unit is provided to measure the mitting UV radiation intensity.
- 9. UV illuminating device according to one or more of claims 1 to 8, whereby in order to couple in the UV radiation, a quartz rod is respectively provided between the UV lamp and the light admission area of the optical fibre.



- 10. UV illuminating device according to claim 9, whereby a cut-on filter is provided between the quarz rod and the optical fibre in order to absorb short-waved UV radiation.
- 11. UV illuminating device according to claim 10, whereby a WG 305 is provided as the cuton filter.
- 12. UV illuminating device according to one or more of claims 1 to 11, whereby a diaphragm is provided between the optical fibre and the UV lamp.
- 13. UV illuminating device according to claim 12, whereby the aperture of the diaphragm is adjusted by means of a stepping motor unit.
- 14. UV illumination device according to one or more of claims 8 to 13, whereby the aperture of the diaphragm is controlled in accordance with the measurement of UV radiation intensity being emitted.
- 15. UV illuminating device according to one or more of claims 1 to 14, whereby a UV condenser is mounted between the optical fibre and the mould half.
- 16. UV illuminating device according to one or more of claims 1 to 15, whereby the optical fibres are arranged radially around the UV lamp in relation to the longitudinal axis of the UV lamp.

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